Amendments to the Claims:

The listing of Claims will replace all prior versions and listings of the Claims in the application:

In the claims:

1. – 58. (Canceled)

59. (Previously Presented) An apparatus for sensing the current in a power line of a power system, the apparatus comprising:

an active current transformer that includes a secondary coil wound on a secondary core, wherein the secondary core is operable to be magnetized with a power line and the secondary coil is operable to supply a load;

a compensation circuit operable to compensate for magnetic losses in the secondary core;

a power supply circuit having a supply rail, wherein the power supply circuit is operable to regulate the supply rail in one of a switched regulation mode and linear regulation mode to supply power to the compensation circuit from the supply rail; and

a powering current transformer that includes a power coil wound on a power core, wherein the power core is operable to be magnetized with the power line and the supply rail is powered from the power coil.

60. (Previously Presented) The apparatus of claim 59, further comprising a microprocessor and a regulator, wherein the microprocessor is operable to regulate voltage on the supply rail in the switched regulation mode and the regulator is operable to regulate voltage on the supply rail in the linear regulation mode.

61. (Previously Presented) The apparatus of claim 59, wherein the power supply circuit comprises a shunt switch coupled between a ground connection and the supply rail, the shunt switch selectable to be one of open and closed during the switched regulation mode, and the conductivity of the shunt switch operable to be dynamically modulated during the linear regulation mode.

62. (Previously Presented) The apparatus of claim 59, wherein the power supply circuit comprises a first switch and a second switch coupled with the supply rail, the first switch

selectively enabled to provide a conductive path to ground and the second switch selectively enabled to conduct when a voltage at the first switch is greater than a voltage of the supply rail.

63. (Previously Presented) The apparatus of claim 59, wherein the power supply circuit comprises an energy storage device coupled with the supply rail, the energy storage device operable to selectively receive a charging current to maintain a determined voltage on the supply rail.

64. (Previously Presented) The apparatus of claim 59, further comprising a microprocessor and a compensation overload detection circuit powered from the supply rail, wherein the compensation overload detection circuit is operable to provide the microprocessor an indication when the compensation circuit is no longer compensating for all of the magnetization losses in the secondary core.

65. (Previously Presented) The apparatus of claim 59, wherein the active current transformer comprises a sense coil wound on a sense core, wherein the secondary coil is wound around both the secondary core and the sense core, and the sense core is magnetized by the power line and is operable to induce a sense current in the sense coil, and wherein the compensation circuit is operable to generate a compensation current to maintain the voltage across the sense coil at about zero volts.

66. (Previously Presented) The apparatus of claim 65, further comprising a current divider coupled with the sense coil and the secondary coil, wherein the current divider is operable to balance the compensation current.

67. (Currently Amended) The apparatus of claim 59 [[50]], further comprising a current monitoring circuit that includes a secondary coil sensing current transformer coupled with the power coil, the current monitoring circuit operable to generate a voltage representative of the output current.

68. (Previously Presented) The apparatus of claim 59, further comprising an auxiliary power terminal, wherein the supply rail is operable to supply power to the auxiliary power terminal for use external to the apparatus.

69. (Previously Presented) An apparatus for sensing the current in a power line of a power system, the apparatus comprising:

a power current transformer that includes a power coil wound around a power core, the power core operable to be magnetized by a power line to produce an output current from the power coil;

a power amplifier circuit that includes an energy storage device and a shunt switch coupled with the power coil;

wherein the shunt switch is selectively operable to shunt at least a portion of the output current to ground to maintain a determined voltage at the energy storage device; and

an active current transformer that includes a secondary coil wound on a secondary core, wherein the secondary coil is operable to supply a burden and the secondary core is operable to be magnetized with the power line.

70. (Previously Presented) The apparatus of claim 69, further comprising a compensation circuit coupled with secondary coil and the energy storage device, wherein the compensation circuit is powered by the energy storage device and is operable to compensate for magnetic losses in the secondary core.

71. (Previously Presented) The apparatus of claim 69, further comprising a bridge rectifier coupled between the power coil and the power amplifier circuit, the bridge rectifier operable to rectify the output current.

72. (Previously Presented) The apparatus of claim 69, wherein the power amplifier circuit comprises a microprocessor and a linear regulator, the microprocessor operable to monitor the output current and to select between switch mode regulation of the energy storage device with the microprocessor and linear regulation of the energy storage device with the regulator as a function of the output current.

73. (Previously Presented) The apparatus of claim 69, wherein the power amplifier circuit comprises a one way switch, the one way switch operable to conduct only when the voltage at the energy storage device is less than the voltage at the shunt switch.

74. (Previously Presented) The apparatus of claim 69, further comprising a switched capacitor circuit coupled with the energy storage device, wherein the switched capacitor circuit is operable to generate a predetermined negative voltage on a negative rail and a predetermined positive voltage on a positive rail from the determined voltage of the energy storage device.

75. (Previously Presented) The apparatus of claim 69, wherein the shunt switch comprises a semiconductor device and the energy storage device comprises a capacitor.

76. (Previously Presented) The apparatus of claim 69, further comprising an auxiliary power terminal, wherein the energy storage device is operable to supply power to the auxiliary power terminal for use external to the apparatus.

77. – 84. (Canceled)